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Neuromodulating cognitive architecture: Towards biomimetic emotional AI

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Abstract

© 2015 IEEE. This paper introduces a new model of artificial cognitive architecture for intelligent systems, the Neuromodulating Cognitive Architecture (NEUCOGAR). The model is bio mimetically inspired and adapts the neuromodulators role of human brains into computational environments. This way we aim at achieving more efficient Artificial Intelligence solutions based on the biological inspiration of the deep functioning of human brain, which is highly emotional. The analysis of new data obtained from neurology, psychology philosophy and anthropology allows us to generate a mapping of monoamine neuro modulators and to apply it to computational system parameters. Artificial cognitive systems can then better perform complex tasks (regarding information selection and discrimination, attention, innovation, creativity) as well as engaging in affordable emotional relationships with human users.

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Keywords

Affective Computing, AI, Cognitive Modeling, Computing Emotions, Emotional Thinking, Machine Thinking, Neuromodulation, Neurotransmission